What is claimed is:

1. A communication link for providing two-way communication through free space, the link including a first transceiver and a second transceiver, wherein at least one transceiver comprises:

an input signal interface for receiving one or more digital signals;

a splitter in communication with the input to split the one or more digital signals into a plurality of approximately equal laser data signals;

a plurality of lasers displaced from one another and facing in parallel directions, each of the lasers being in communication with the splitter;

a plurality of laser drivers, each laser driver being coupled to one of the lasers and to the splitter, wherein the laser drivers receive the laser data signals and provide amplified laser data signals to the lasers at high power and high frequency.

2. The communication link of claim 1, wherein the input signal is characterized by a data rate of at least 10 Mbits/second, and each laser is supplied with a nominal current of at least 100 mA.

3. The communication link of claim 1, wherein the digital signals comprise optically transmitted data signals.

4. The communication link of claim 1, wherein said at least one transceiver further comprises a signal regenerator in communication with the one or more digital input signals.

5. The communication link of claim 4, wherein the regenerator includes a first clock and data recovery circuit, and the clock and data recovery circuit may be switched between one of a plurality of clock frequencies.

6. The communication link of claim 1, wherein each of the plurality of lasers includes a laser diode coupled to the laser driver and receiving the amplified laser data signals.

7. The communication link of claim 6, wherein each of the plurality of lasers further includes a lens for receiving and collimating the laser diode output into a beam having a beamwidth.

8. The communication link of claim 7, wherein the resulting beamwidth may be adjusted.

9. The communication link of claim 8, wherein the beamwidth may be adjusted between from 0.3 mrad to approximately 3.5 mrad.

10. The communication link of claim 8, wherein the beamwidth may be adjusted by repositioning the lens.

11. The communication link of claim 7, wherein the lens collimates the laser diode output into a beam having a beamwidth of less than 3.5 mrad.

12. The communication link of claim 6, wherein the laser driver includes a modulation signal amplifier coupled with the splitter and a DC bias circuit coupled between the modulation signal amplifier and the laser diode.

13. The communication link of claim 12, wherein the laser driver further includes a sampling photodiode, and the modulation signal amplifier is coupled with the sampling photodiode and responsive to the output of the sampling photodiode.

14. The communication link of claim 13, wherein the laser diode emits a laser beam, and the sampling photodiode monitors the power of the laser beam.

15. The communication link of claim 12, wherein said at least one transceiver further comprises a thermoelectric cooler in thermal communication with the laser diode.

16. The communication link of claim 6, wherein the laser driver operates at a current of approximately between 100 milliAmperes and 1500 milliAmperes.

17. The communication link of claim 6, wherein the laser diode generates an average power of at least 80 milliwatts.

18. The communication link of claim 17, wherein said at least one transceiver has four laser diodes.

19. The communication link of claim 1, wherein said at least one transceiver further comprises a visual sighting scope aligned with the lasers.

20. The communication link of claim 1, wherein said at least one transceiver further comprises a charge coupled detector.

21. The communication link of claim 1, wherein the one or more digital signals comprises packet-based communication signals in accordance with at least one data transmission protocol.

22. The communication link of claim 1, wherein the at least one data transmission protocol complies with a protocol selected from the group consisting of TCP/IP, IPX, Fast Ethernet, SONET, and ATM.

23. The communication link of claim 1, wherein the transceiver is capable of operating on different physical layers.

24. The communication link of claim 1, wherein the transceiver is capable of operating on at least one layer selected from the group consisting of STS-3, STS-12,

OC-3, and OC-12.

25. The communication link of claim 1 wherein said at least one transceiver further comprises:

an aperture;

a reflector in line with the aperture;

a photodiode at the focal point of the reflector; and

an output from the photodiode.

26. The communication link of claim 25, wherein the reflector has an f-number of about 0.67

27. The communication link of claim 25, wherein the reflector is a Mangin mirror.

28. The communication link of claim 25, wherein the reflector is a parabolic reflector coupled with at least one corrector lens.

29. The communication link of claim 25, wherein the reflector is a mirror having a general conic or aspheric optical surface and coupled with at least one corrector lens.

30. The communication link of claim 25, wherein the link is capable of transmitting and receiving broadband signals through free space across a distance of at least eight kilometers in favorable weather conditions.

31. The communication link of claim 25, wherein the link is capable of transmitting and receiving broadband signals through free space across a distance of at least approximately two kilometers in foggy conditions according to a London, England fog environment with 99% availability.

32. The communication link of claim 25, wherein said at least one transceiver further comprises:

a preamplifier coupled with the photodiode;

a regenerator coupled with the preamplifier; and

an output signal interface coupled with the regenerator.

33. The communication link of claim 32, wherein the second clock and data recovery circuit may be switched between one of a plurality of clock frequencies.

34. The communication link of claim 25, wherein said at least one transceiver further comprises a background rejection filter near the focal point of the reflector.

35. The communication link of claim 25, wherein the background rejection filter is flat in shape.

36. The communication link of claim 25, wherein the background rejection filter is hemispherical in shape.

37. The communication link of claim 25, wherein the background rejection filter is a bandpass filter.

38. The communication link of claim 36, wherein the hemispherical filter is an optical interference filter and has a nominal center wavelength of approximately 1550 nanometers.

39. The communication link of claim 38, wherein the hemispherical interference filter has a narrow bandwidth of approximately 100 nanometers.

40. The communication link of claim 34, wherein said background rejection filter is a long wave pass filter having a threshold passage wavelength, said at least one transceiver further comprises a detector having a predictable responsivity roll-off at a wavelength above the threshold passage wavelength of the long wave pass filter.

41. The communication link of claim 25, further comprising a controller.

42. The communication link of claim 25, further comprising a radio frequency backup transceiver.

43. The communication link of claim 1, wherein said at least one transceiver includes monitoring circuitry for monitoring signal strength or transceiver status.

44. The communication link of claim 43, wherein the backup transceiver is activated upon detecting impairment of the laser transceiver, and the backup transceiver is deactivated upon detecting non-impairment of the laser transceiver.

45. The communication link of claim 41, wherein said at least one laser transceiver operates with the backup transceiver in overflow mode.

46. The communication link of claim 1, wherein said at least one laser transceiver is intended for outdoor use and further comprises a protective enclosure.

47. The communication link of claim 46, wherein the enclosure includes a housing.

48. The communication link of claim 47, wherein the housing includes at least one heat sink.

49. The communication link of claim 48, wherein at least one heat sink is integral to the housing.

50. The communication link of claim 48, wherein said at least one laser transceiver further comprises a thermoelectric cooler.

51. The communication link of claim 48, wherein said at least one laser transceiver further comprises a thermoelectric cooler in thermal communication with laser diode and with the housing.

52. The communication link of claim 46, wherein said at least one laser transceiver further comprises an environmental control system for maintaining a desired temperature and humidity within the enclosure.

53. The communication link of claim 47, wherein said at least one laser transceiver further comprises a primary aperture, and the enclosure includes a stray light baffle across the aperture.

54. The communication link of claim 53, wherein the stray light baffle is an aluminum honeycomb baffle.

55. The communication link of claim 1, wherein said at least one transceiver further includes a multiplexer to combine multiple signal inputs and a de-multiplexer to segregate multiple signal outputs.

56. A transceiver of one or more digital signals comprising:

an input signal interface for receiving the one or more broadband digital signals;

a regenerator coupled with the input signal interface;

a splitter coupled with the regenerator to split the one or more digital signals into one or more laser data signals;

a high power, high frequency laser driver coupled with the splitter to condition the laser data signals; and

a plurality of lasers coupled with the laser driver to receive the laser data signals, the lasers being laterally displaced from one another and facing in parallel directions.

57. The transceiver of claim 56, wherein the regenerator includes a first clock and data recovery circuit, and the first clock and data recovery circuit may be switched between one of a plurality of clock frequencies.

58. The transceiver of claim 56, wherein each of the plurality of lasers includes a laser diode coupled to the laser driver and receiving the conditioned laser data signals.

59. The transceiver of claim 58, wherein each of the plurality of lasers further includes a lens receiving the laser output and collimating the output into a beam having a beamwidth of 3.5 mrad or less.

60. The transceiver of claim 58, wherein the laser driver includes a modulation signal amplifier coupled with the splitter and a DC bias circuit coupled between the modulation signal amplifier and the laser diode.

61. The transceiver of claim 60, wherein the laser driver further includes a sampling photodiode, and the modulation signal amplifier is coupled with the sampling photodiode and responsive to the output of the sampling photodiode.

62. The transceiver of claim 61, wherein the laser diode emits a laser beam, and the sampling photodiode monitors the power of the laser beam.

63. The transceiver of claim 60, wherein the laser driver further includes a thermoelectric cooler adjacent to the laser diode.

64. The transceiver of claim 58, wherein the laser driver operates at a current of approximately between 100 milliAmperes and 1500 milliAmperes.

65. The transceiver of claim 58, wherein the laser diode generates an average power of at least 80 milliwatts.

66. The transceiver of claim 65, there being four laser diodes.

67. The transceiver of claim 56, further comprising a visual sighting scope aligned with the lasers.

68. The transceiver of claim 56, further comprising a charge coupled detector.

69. The transceiver of claim 56, wherein the one or more digital signals comprises packet-based communication signals in accordance with at least one data transmission protocol.

70. The transceiver of claim 69, wherein the at least one data transmission protocol complies with a protocol selected from the group consisting of TCP/IP, IPX, Fast Ethernet, SONET, and ATM.

71. The transceiver of claim 69, wherein the transceiver is capable of operating on different physical layers.

72. The transceiver of claim 69, wherein the transceiver is capable of operating on at least one layer claim at least one layer selected from the group consisting of STS-3, STS-12, OC-3, and OC-12.

73. The transceiver of claim 56, further comprising:

an aperture;

a reflector in line with the aperture;

a photodiode at the focal point of the reflector;

a preamplifier coupled with the photodiode;

a second regenerator coupled with the preamplifier; and

an output signal interface coupled with the second regenerator; and

74. The transceiver of claim 73, wherein the reflector is selected from the group consisting of Mangin mirror, parabolic reflector coupled with a corrector lens, and mirror having a general conic or aspheric optical surface and coupled with at least one corrector lens.

75. The transceiver of claim 73, wherein the transceiver is capable of communicating broadband signals through free space across a distance of at least eight kilometers in favorable weather conditions.

76. The transceiver of claim 73, wherein the transceiver is capable of communicating broadband signals through free space across a distance of at least

approximately two kilometers in foggy conditions according to a London, England fog environment with 99% availability.

77. The transceiver of claim 73, wherein the regenerator includes a first clock and data recovery circuit, and the first clock and data recovery circuit may be switched between one of a plurality of clock frequencies.

78. The transceiver of claim 77 further comprising a background rejection filter adjacent to the focal point of the reflector.

79. The transceiver of claim 78, wherein the background rejection filter is an optical hemispherical interference filter having a nominal center wavelength of approximately 1550 nanometers.

80. The transceiver of claim 79, wherein the hemispherical interference filter has a narrow bandwidth of approximately 100 nanometers.

81. The transceiver of claim 73, wherein the reflector has an f-number of about 0.67.

82. An apparatus for efficiently driving a laser diode, the apparatus comprising:

a signal source providing an input signal;

a laser diode having a characteristic impedance; and

a power amplifier with a low output impedance suited to drive the laser diode;

wherein the power amplifier is operated as a voltage-controlled current driver for the laser diode.

83. The apparatus of claim 82, further comprising a voltage amplification stage between the signal source and the power amplifier.

84. The apparatus of claim 83, wherein the voltage amplification stage includes a non-linear limiting amplifier.

85. The apparatus of claim 82, wherein the power amplifier includes a broadband RF power field effect transistor.

86. The apparatus of claim 82, wherein the broadband RF power field effect transistor is operated with a low supply voltage.

87. The apparatus of claim 82, wherein the supply voltage of the power amplifier is approximately equal to or less than 12 volts.

88. The apparatus of claim 82, wherein the supply voltage of the power amplifier is approximately 5 volts.

89. The apparatus of claim 85, wherein the power field effect transistor is selected from the group consisting of MOSFET, silicon FET, and GaAs FET.

90. The apparatus of claim 85, wherein the broadband RF power field effect transistor is capable of operating at a minimum frequency of 1 MHz or less.

91. The apparatus of claim 82, wherein the power transistor provides output current of at least 100 mA to the laser diode.

92. The apparatus of claim 82, wherein the power transistor provides output current of at least 200 mA to the laser diode.

93. The apparatus of claim 91, wherein the input signal is characterized by a data rate of at least 10 Mbits/second.

94. The apparatus of claim 91, wherein the input signal is characterized by a data rate of at least OC-3 bandwidth.

95. The apparatus of claim 82, wherein the input signal is a signal selected from a group of protocols consisting of: TCP/IP, IPX, Fast Ethernet, SONET, and ATM

96. The apparatus of claim 82, wherein the laser diode has a characteristic dynamic impedance of between approximately 2 and 5 ohms.

97. The apparatus of claim 82, further comprising a thermoelectric cooler in thermal communication with the laser diode.

98. The apparatus of claim 82, wherein the laser diode is stabilized against temperature fluctuations.

99. The apparatus of claim 82, wherein the power amplifier is stabilized against supply voltage fluctuations.

100. The apparatus of claim 99, further comprising a zener diode for stabilizing power supply voltage against voltage fluctuations.

101. The apparatus of claim 82, further comprising an attenuator between the signal source and the power amplifier.

102. The apparatus of claim 101, wherein the attenuator is adjustable and is used to control the amplitude of the input signal to the power amplifier.

103. The apparatus of claim 82, further comprising:

a temperature sensor for sensing temperature of the laser diode,

a thermoelectric cooler in thermal communication with the laser diode, and

a thermoelectric cooler power amplifier,

wherein the thermoelectric cooler power amplifier is operated as a controlled current source to supply current to the thermoelectric cooler at near-perfect efficiency when maximum cooling is required.

104. The apparatus of claim 103, wherein the temperature sensor is a thermistor.

105. The apparatus of claim 104, wherein the voltage drop across the thermistor at a given temperature is compared to a reference voltage corresponding to the thermistor voltage when it is operated at a desired setpoint temperature.

106. The apparatus of claim 103, wherein the power amplifier is a power FET.

107. A method for efficiently driving a laser diode, the method comprising the steps of:

providing a wideband input signal,

providing a power amplifier with a low output impedance suited to drive a laser diode;

generating a wideband output current from the wideband input signal to modulate the laser diode,

operating the power amplifier as a voltage-controlled current driver for the laser

diode.

108. The method of claim 107, further comprising the steps of

selecting minimum, maximum, and average power levels for the laser diode;

supplying bias current to the laser diode to operate the laser at the selected average power level

supplying wideband modulation to cause the laser output to vary between selected minimum and maximum output power levels.

109. The method of claim 107, wherein the communication input signal is characterized by a rate of at least 10 Mbits/second and the power amplifier provides output current of at least 100 mA to the laser diode.

110 The method of claim 107, wherein the power amplifier is operated as a voltage-controlled current source by DC biasing the power amplifier with a gate voltage to provide linear modulation of the laser drive current.

111. The method of claim 108, wherein modulation of the power amplifier output causes the laser drive current to swing from nearly off to the desired output power with an optical power extinction ratio of at least 10:1.

112. The method of claim 107, further comprising the step of providing adaptive control of the output power of the laser driver.

113. The method of claim 107, further comprising the step of controlling the laser output power in multiple discrete steps.

114. The method of claim 113, wherein the step of controlling the laser output power is accomplished by simultaneously controlling the power amplifier gate bias voltage, bias current of the laser diode, and modulation current of the laser diode using an input signal.

115. The method of claim 113, wherein the power amplifier output power is controlled in multiple discrete steps with a digital control input signal characterized by at least 2 bits.

116. The method of claim 113, wherein an attenuator is provided, and the digital control input signal is used to attenuate the modulation signal.

117. The method of claim 108, further comprising the step of imposing a narrowband modulation on the laser drive current.

118. The method of claim 117, wherein the narrowband modulation is a telemetry signal.

119. The method of claim 117, wherein the narrowband modulation is a

tracking tone

120. The method of claim 117, wherein the frequency of the narrowband modulation is between 50 Hz and 50 kHz.

121. The method of claim 108, further comprising the step of monitoring laser bias current.

122. The method of claim 107, further comprising the step of monitoring peak-to-peak amplitude of the laser modulation current.

123. A method for operating a thermoelectric cooler, the method comprising the steps of:

providing a temperature sensor, a thermoelectric cooler control circuit including a power amplifier, a low voltage power supply, and a thermoelectric cooler,

sensing the temperature of a item to be temperature-controlled,

operating the power amplifier as a controlled current source to supply current to the thermoelectric cooler at near-perfect efficiency when maximum cooling is required.

124. The method of claim 123, wherein the sensor is thermistor

125. The method of claim 123, further comprising step of providing a voltage divider circuit and a regulated supply voltage, wherein the thermistor is part of the voltage divider circuit.

126. The method of claim 123, wherein the thermoelectric cooler has a characteristic impedance and an optimal operating current, and the item to be temperature controlled has a maximum cooling requirement, the method further comprising the steps of:

selecting optimal operating current of the thermoelectric cooler to correspond with the maximum cooling requirement of the item to be temperature controlled, and

selecting the impedance of the thermoelectric cooler to drop substantially all of the supply voltage when the thermoelectric cooler is operated to provide the maximum cooling requirement of item to be temperature controlled.

127. The method of claim 123, wherein the power supply voltage is approximately 5 volts or less.